ORIGINAL ARTICLE

The Commercialization of Patient-Related Decision Making in Hospitals

A Qualitative Study of the Perceptions of Doctors and Chief Executive Officers

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SUMMARY

Background: Hospitals must make a profit to ensure their continued existence. The observed rises in case numbers and case-mix indices lead us to suspect that the admission, treatment, and discharge of patients are now being influenced not just by purely medical factors, but also by economic considerations with a view toward making a profit—i.e., that decision-making has become partially commercialized. In this study, we investigated whether doctors and hospital chief executive officers (CEOs) share this perception of their professional environment.

Methods: In a qualitative study, doctors and hospital CEOs were interviewed. The survey was carried out in two waves over the period 2013–2016. 22 pilot interviews, 41 guided interviews, 3 focus groups, 1 written expert questionnaire and 1 workshop discussion were conducted. Responses were evaluated according to the “grounded theory” of the social sciences.

Results: Some of the doctors’ and CEOs’ perceptions of the patient-care situation differed markedly from each other. The CEOs mentioned the need for a profit orientation and stressed that they obeyed the legal requirement not to have any direct influence on medical decision-making, while acknowledging that physicians’ actions might be influenced indirectly. The doctors, on the other hand, reported feeling increasing pressure to consider the economic interests of the hospital when making decisions about patient care, leading not only to overtreatment, undertreatment, and incorrect treatment, but also to ethical conflicts, stressful situations, and personal frustration.

Conclusion: The doctors’ responses indicate that the current economic framework conditions and the managers of hospitals are currently influencing medical care to the detriment of the patients, physicians, and nurses. It is important to acknowledge that economic pressure on hospitals can undermine the independence of medical decision-making. The dilemmas facing doctors and hospital CEOs should be openly discussed. The economic framework conditions and steering concepts should be changed as suggested by these findings.

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Every patient starting treatment wants to know they can trust the doctor and the hospital. Physicians promise (1) that “maintenance and restoration of patients’ health” will be their “paramount duty.” From this, their official code of conduct derives the precept that “with regard to their medical decisions, physicians may not take any instructions from nonphysicians” (1). This principle is violated whenever medical decision making in the hospital is affected directly or indirectly by nonphysicians on financial grounds in such a way that patient wellbeing no longer represents the “paramount duty.”

There is no doubt that medical and managerial actions in Germany are increasingly being influenced by limited financial resources. In contravention of their legal obligations, the federal states finance only around 50% of the necessary investment, the rest having to be raised by the hospitals themselves. Emergency rooms cannot cover their costs, and hospitals’ outlay on treating so-called extreme cases cannot be recovered in full. These losses have to be compensated by profits from the treatment of inpatients. The same is true for losses caused by overcapacity, by annual adjustments of standard state-level case reimbursements that fail to match increases in costs, and by other factors.

This article presents one part of the findings of a qualitative study (2). In contrast to the large number of studies (3–16) on developments in case volumes published between 2011 and 2014, all based on statistical data routinely collected by hospitals or health insurance providers, our study represents the viewpoints of hospital protagonists. The intention was to reveal further possible links between the financial constraints on hospitals, operational management, and doctors’ decision making with regard to patients.

The aim of our study was to verify whether doctors and chief executive officers (CEOs) perceive any influence of hospitals’ economic interests on physicians’ actions and thus on the practice of medicine and patient care. Advice is given on what to do if this is so. Implementation of these recommendations may help to exclude or at least restrict the commercialization of decisions that affect patients.

BOX 1

Characteristics of the participants

Chief executive officers (n = 31) and doctors (n = 32)

- Characteristics of the doctors:
 - Junior doctors (n = 8)
(youngest in third clinical year)
 - Qualified specialists (n = 7)
 - Senior physicians (n = 13)
 - Heads of department (n = 4)
 - Women (n = 10), men (n = 22)
 - Specialties: Internal medicine, surgery, gynecology, pediatrics, neurology, psychosomatics, anesthesia, dermatology
 - Federal states: Schleswig-Holstein, Hamburg, Lower Saxony, Bremen, Berlin, Mecklenburg–West Pomerania, Brandenburg, Baden–Württemberg, Bavaria, Hesse
- Characteristics of the chief executive officers (CEOs):
 - CEOs of individual hospitals (n = 19)
 - Members of central executive boards (n = 10)
 - Regional directors (n = 2)
 - Federal states: Berlin, Hamburg, Bremen, Brandenburg, North Rhine–Westphalia, Baden–Württemberg, Saxony, Saxony–Anhalt, Rhineland–Palatinate, Bavaria, Schleswig-Holstein

Method

We selected a qualitative study design in line with the “grounded theory” of Glaser and Strauss, a well-established method in the social sciences (17). We questioned 32 doctors and 31 CEOs in detail in face-to-face pilot and guided interviews between the end of 2013 and fall 2016. The interviews were documented verbatim in writing. Furthermore, three focus groups were conducted with a total of 22 participants, and three further group discussions took place. In the attempt to throw light on the reasons for the pronounced differences between the doctors’ responses and those of the CEOs, the interviews were followed by written questioning of five CEOs and five doctors and a workshop discussion with 12 participants (seven CEOs and five doctors).

The participants’ hospitals were situated in several different federal states and varied in funding, organization, and size. The doctors worked in several different specialties and were of varying seniority (*Box 1*). Each participant was approached directly in person. No permission was sought from superiors. We financed the study from our own funds. Further details can be found in the *eMethods* and in *eTables 1–4*.

Results

Twenty-one of the 68 chief executive officers who were approached agreed to an interview. Those who

declined predominantly cited lack of time. Only one of the doctors we approached decided against participation. With regard to medical decision-making practice, most of the CEOs expressed themselves in normative terms (“that’s how it should be”), whereas the doctors mostly made empirical statements (“that’s how it is,” “that’s how I experience it”), referring to examples and to their experience. In this way the doctors painted a different picture of German hospital medicine than the CEOs. The two groups’ responses often differed widely from one another (*Table*). Their relationship was often—but not always—described as tense and beset by conflict.

The results of the pilot interviews were broadly confirmed by those of the guided interviews.

Chief executive officers reported pressure to achieve a sufficiently high profit (*Box 2*). Doctors see the resulting operational guidelines as affecting their medical decisions on patient care. Most of them rate this as problematic.

For chief executive officers, a hospital has to be run in such a way that a profit can be made (*Box 3, item 1*). They reported that—in accordance with legal requirements—they exert no direct influence on doctors’ decisions (*Box 3, item 2*), but that operational guidelines indirectly affect doctors’ actions.

Almost all doctors answered the question of whether they encounter situations in the course of their work in which patient-related decisions and actions are guided not only by medical considerations with a definite “yes” (*Box 4, item 1*). Only one doctor, the medical director of a private hospital group, emphasized that in his institution—in contrast to many other hospitals he knew of—decisions were made purely on medical grounds.

The doctors who were interviewed believed that economic considerations influence medical decisions on an almost daily basis in German hospitals and predominantly saw this as negative. In no interview was it welcomed or rated in any way positively. The responses were strongly colored by emotion. All 32 conversations with doctors revealed their need to discuss the topic. It was repeatedly stressed that “nothing like that” should be allowed to happen, that it was a “hot potato” that could not be discussed openly although it definitely should be discussed.

The scale and frequency of operational influences on medical decisions were variably perceived and rated (*eSupplement Interview* [in German]). The overwhelming majority of doctors perceived these influences as “continual” (“daily—in every consultation and during every ward round”), “ever increasing” (“it’s happening more and more”), and “repeated” (“not always...now and again”) (*eSupplement Interview*) and thus as a characteristic feature of their work. Only two doctors stated there was “no” or “slight” influence. No differences were discernable according to type of funding organization, but there were recognizable differences among hospital

TABLE

Answers from doctors and chief executive officers to selected questions

Question	Answers (guided interviews only)			
	Doctors		Chief executive officers	
For economic reasons, patients are admitted who do not necessarily belong in the hospital.	Yes No n.a.	16 1 3	Yes No n.a.	3 17 1
For economic reasons, "lucrative DRGs" are admitted preferentially.	Yes No n.a.	9 9 2	Yes No n.a.	3 16 2
For economic reasons, private patients are admitted preferentially.	Yes No n.a.	10 5 5	Yes No No clear answer	1 18 2
For economic reasons, separately billed procedures such as cardiac catheterization or colonoscopy are performed in patients in whom they are not medically necessary.	Yes No n.a.	9 4 7	Yes No n.a.	3 17 1
For economic reasons patients are being admitted repeatedly, although before the DRG era only one hospital stay was the rule.	Yes No n.a.	12 4 4	Yes No n.a.	9 11 1
For economic reasons patients are being treated surgically, although conservative treatment would be appropriate from the medical viewpoint.	Yes No n.a.	8 4 8	Yes No n.a.	4 15 2
Medical departments and procedures that make the hospital a lot of money are expanded in preference to other services. This is not always in accord with medical demand.	Yes No n.a. Neither yes nor no	18 0 0 2	Yes No n.a.	5 13 2 1
The duration of treatment of patients, e.g., ventilation or length of stay in an intensive care unit or palliative care ward, is sometimes influenced directly or indirectly by the DRG.	Yes No n.a.	12 5 3	Yes No n.a. Neither yes nor no	5 13 0 1
For reasons of cost, the second- or third-best form of treatment is occasionally chosen.	Yes No n.a.	7 8 5	Yes No n.a.	1 19 1
Patients' time of discharge is often not determined purely on medical and social grounds.	Yes No n.a.	11 8 2	Yes No n.a.	11 8 2

DRG, diagnosis-related groups; n.a., no answer

groups and between hospitals in the same group depending on local management.

The influence was not always indirect but sometimes direct. In contrast to the CEOs, who repeatedly underlined that they did not want patients to be admitted to the hospital and treated as inpatients in the absence of medical indications (*Box 3, item 4*), doctors reported that not only indirect but also direct influence on medical decisions had been exerted or attempted (*Box 4, item 2*).

From the doctors' perspective, the strongest indirect influences on their decisions include assessment of staffing levels and opening or closure of departments and wards by management. This almost always leads to problems, complaints, and conflicts.

The purchasing of materials and medications was also criticized as exerting indirect influence on medical practice. According to the doctors, in many hospitals the buyers make their decisions according to cost rather than on grounds of medical quality (*Box 4, item 3*).

Who exerts the influence?

The majority of the doctors saw senior management, representatives of the funding organization, or the executive board of the controlling company as the central source. These bodies have the power to decide on employment, dismissal, staffing, corporate strategy and goals, bonus payments, the benchmarks of resource distribution, and the closure or opening of wards. The chain of command runs from management to the medical heads of department, who are usually bound by agreements on economic objectives, and from them to their senior physicians. Medical directors with older contracts seem to be more independent. Some more junior doctors view their seniors as representatives of economic goals.

In communal hospitals it is local politicians making decisions in the background, for private hospital groups it is the central management team (*Box 4, item 7*). Medical directors, and also professors at university hospitals and lower-ranking physicians, are subject to

BOX 2

Goals of operational guidelines*

- Annual return
- Profit
- Yield
- Profit margin
- Number of inpatients
- Number of diagnostic and therapeutic services, case-mix points
- Revenue
- Number of staff
- (Personnel) costs
- Case-mix points/doctor
- Specifications of the diagnosis-related groups catalog with regard to length of stay

* According to the statements of the participating chief executive officers and doctors

the directives of the management board but not with regard to direct medical decisions. Doctors' leeway in medical decision making was rated smaller by the doctors themselves than by the CEOs. Expressed in terms of the marking system used in German schools (a scale of 1 of 6, where 1 is the highest mark), the 20 doctors in the main study assigned their decision-making freedom an average mark of 3 to 4, while the CEOs believed that the physicians had much more latitude (average mark 1 to 2). Junior doctors and qualified specialists thought their own freedom of decision was greater than that of their more senior colleagues. This group also reported using evasive techniques. They repeatedly said they actually pitied their heads of department and reported a loss of respect for them.

Personnel policy and its influence on staff and patients

The doctors reported:

- Medical procedures that could not be carried out with the proper degree of efficiency and safety, or could not be performed at all, owing to a shortage of suitably qualified medical or nursing staff (e.g., insertion of vascular catheters, cross-matching, administration of special anesthetics, implementation of particular chemotherapies)
- Deficient performance due to overwork and to decisions necessitated by inadequacy of previous procedures

According to the doctors, increased workload, lack of time, and stress affected the quality of decisions and of the preparatory processes. This led to risks for staff and patients.

The doctors stated that decisions often contained an unconscious element of rationing with regard to the

amount of time and degree of attention available for tasks and patients. While the necessary diagnostic and therapeutic procedures were usually (though not always) carried out, there was not enough time for explanation and general support of patients before and after operations and diagnostic interventions. They reported that alternative treatments often could not be discussed with the patient in sufficient detail. The situation was particularly critical in smaller hospitals.

The hospital management's staffing policy is a sore point for most doctors (*Box 4, item 4*). They are of the opinion that young doctors are not given adequate opportunity to familiarize themselves with their respective specialty. This leads to situations where, given their position of responsibility to the patient and to the hospital, they are subject to extreme pressure, being forced to take decisions alone, swiftly, and without sufficient expertise (*Box 4, item 5*). Delays and incorrect decisions are the result (*Box 4, item 6*). On the other hand, the doctors believe, experienced physicians are overloaded because all clinical questions and decisions are referred to them while they are preferentially involved in tasks that have to be performed as safely and quickly as possible. Young doctors are then often left to their own devices, whether in discharging routine tasks or in dealing with emergencies on the ward, in the emergency room, in the intensive care unit, in the out-patient department, or on rounds. Training courses and rounds led by senior physicians or heads of department have to be shortened or their frequency reduced.

Among the reports of negative impact on health was the following from a confessional hospital: "What worries me a lot is that with all that happens with the staff, mental problems and stress, there's nowhere to turn. It's ruthless exploitation, it can't be expressed in numbers, the worries you have, how you reproach yourself when you've treated someone poorly, I wish there was a way of quantifying it or at least making it tangible."

Commercialization and its influence on decisions regarding admission, treatment, and discharge

Doctors reported that their decisions on admission, nature of treatment, and time of discharge would be different if they were free of constraints. They take full advantage of, and sometimes—in order to implement operational guidelines—even go beyond the gray areas in deciding whether procedures are indicated.

The economically motivated demands on physicians mentioned in the interviews were:

- Maximize occupancy (even if greater risks to patients are involved)
- Increase case numbers
- Minimize the number of resource-intensive "unprofitable" patients
- Never ask emergency rescue services to take patients elsewhere even when your emergency department is overloaded
- Arrange length of stay according to diagnosis related groups (DRG)

BOX 3

What chief executive officers say:

1. "Operational guidelines also affect corporate decisions. The hospital's portfolio is developed not only in response to medical needs, but also according to its influence on the hospital's profitability. Guidelines for individual departments are also drawn up with this in mind."
2. "Economists exert no influence on medical decision making."
3. "The latter (= influence of operational guidelines on medical decision making), in that several years have gone by since management started changing the hospital's portfolio and focusing on particular services in order to make profits that are needed for investment." "Therefore, the only patients now admitted and treated are those whose diagnoses match these services."
4. "I would not like doctors to admit patients with no clear-cut medical indication." "Management propagates ethically guided behavior."
5. "It cannot be ruled out that operational guidelines play a role in deciding whether patients should be admitted."

- Maximize case-mix index
- Be "creative" in determining indications (unnecessary treatments)
- Make full use of profitable apparatus, procedures, and facilities (surgery, endoscopy, intensive units, ventilation equipment, specialized diagnostics, cardiac catheterization)
- "Case splitting" (discharge and readmission instead of internal transfer)
- Keep patients where they are, even if they could be treated better elsewhere
- Give priority to the care of private patients.

The reported consequences: increased workload, time pressure, acceleration

Almost all of the doctors interviewed mentioned acceleration of treatments, having to work too fast, increased workload, lack of time, and experiencing severe stress. They reported that pressure to establish the diagnosis could lead to incorrect decisions and inappropriate treatment. Watchful waiting and "talking medicine" are economically punished. Invasive procedures and use of apparatus were held to be preferred to conservative treatments. Many of the doctors perceived violations of the precepts of medical ethics. This was denied by the CEOs, who nevertheless repeatedly qualified their statements by saying that they did not know precisely how the doctors made their decisions in individual cases.

Discussion

The partial results of our study presented here describe the subjective opinions of doctors and chief executive officers. They bear witness to differing perceptions and different circumstances in the various hospitals. Doctors emphasize that their medical decisions are influenced by the funding situation and by operational management, often with negative consequences for treatment quality, patient safety, and the medical staff

themselves. This state of affairs is apparently not discussed openly with senior managers. The majority of physicians take the view that doctors are under pressure from company executive boards and hospital managers to commercialize their patient-related decisions, because simple economy alone does not yield the necessary profit. They would often decide otherwise if they were to take only medical considerations into account (18–20).

Chief executive officers have to make profits, but are forbidden by law to exert influence on medical decisions. Nonetheless they have to ensure that the organizational processes are designed in such a way that they promote the interest of the body running the hospital. For their part, doctors are not supposed to permit their treatment decisions to be influenced by nonphysicians, but in reality are forced to do so. They may even adopt economic goals of their own accord (*Box 4, item 3*), although they are legally obliged to advise patients with no regard to economic considerations. This backdrop may also help to explain the CEOs' opinions. It is often difficult to draw a clear line between permissible indirect influence and forbidden direct influence.

The majority of CEOs state that medical decisions should not be influenced by economic guidelines (*Box 3, item 4*). Others confirm economic influences, but restrict their answers by using terms such as "It cannot be ruled out that..." (*Box 3, item 5*). Medical directors are usually contractually obliged not to discuss internal hospital matters (§ 21 (2) example of a medical director's contract of employment: "The medical director must exercise discretion with regard to all internal hospital matters, even when the working relationship has come to an end") (21). This stipulation also applies to the conditions of the contract itself. Open debate is additionally hampered by competition among hospitals and the danger of scandalous media coverage. Furthermore, numerous studies have shown clear associations between a low degree of professional

BOX 4

What doctors say:

1. "Yes, very many small decisions made by individuals are definitely taken with economic considerations in mind. There are a lot of small decisions, but also more wide-reaching actions that are passed down by medical department heads to junior doctors that are very often clearly characterized more by economic than by medical considerations. It involves all the processes in the department: admission and discharge management, duration of treatment, decisions that are taken or not taken, also medications and treatment strategies (...) often indirectly via the staff pool, of course.
2. "That tends to be indirect. That was a matter for the department head and senior physicians and management...but they also say it directly—of course—when they are talking about case numbers or the CMI." (CMI, case-mix index)
- "Both. The senior physicians are sometimes very direct. But behind them are the department heads, and behind them management. And the new generation of doctors, that's what particularly worries me, don't know it any other way. In outpatients it's even worse. (...) It's got so abstruse. It'll soon have nothing to do with medicine anymore. The system is degenerating to a purely commercial service organization."
3. "That's right, you can't use what you know is good for treatment, you have to take the cheapest option. In oncology we didn't modify treatments for financial reasons, but when it comes to extraneous materials, like pacemakers, stents, catheters in cardiology, it wasn't possible to choose the best (...) that was decided by the buyers (...) Then you suddenly get new inferior suture material or a set with too few swabs, because the purchasing department always buys what's cheapest."
4. Staffing policy as a sore point for doctors: [cynical laugh] "That (...) is a nice question. Well, the last chief executive officer openly stated that his *modus operandi* was to reduce staff in the departments until people protested and then he would hire one additional staff member, knowing he was really at the lower limit (...) that's no secret (...) The staff are completely dissatisfied and angry (...) appointment of people whose personalities just don't fit is not uncommon."
5. "Yes! As a young doctor you often can't get hold of a senior physician because one's in endoscopy, one's on a training course, the third one's in some meeting or other, and then you sometimes have a problem and extreme stress." "Yes, very much! Everywhere, in fact—I've never heard of a doctor who hadn't also suffered from it. The only exceptions are doctors from hospitals run by employers' liability insurance associations—they've got enough money—that's the proof."
6. I have the feeling I'm making more mistakes, I think that life-threatening situations are coming about—from the somatic viewpoint—because too few staff are available. And because processes are so optimized—from the point of view of the hospital management—that there's no more room for error.
7. Local politicians support the managers, who tell the doctors how much money has to be acquired. And if that doesn't work, the pressure is increased ever further. If there are then unusual medical burdens, such as infants with MRSA, the situation gets critical, because in the end the returns are too low. Then come the cutbacks (...) above all in staff, but also in treatments, particularly in special cases. There are conversations between management and the medical director of the hospital—and then occupancy numbers are determined that we have to meet—we are informed about them—we're supposed to decide according to medical indications, but the numbers are there (...)." (MRSA, multiple-resistant *Staphylococcus aureus*)
8. Qualified specialist: "We are indirectly involved—spine patients, prolapsed disks, and such things. There are already instructions that lean in the direction of relaxing the criteria for transfer to the new spine department (...) even from the medical hierarchy." (commercial hospital group)
- Qualified specialist: "Yes, just imagine, in discussions of goals the board asked if all patients over 65 couldn't have hip radiography (osteoarthritis) (...) whether we could imagine that (...) we were appalled (...) it was rejected, but they tried it on." (independent, non-profit-making funder)
- "In the emergency room they talk about the €4.80 patients." (district hospital)

freedom in clinical decision making and the occurrence of serious health disorders (22). Recent quantitative studies have come to similar conclusions (23, 24). Without public disclosure of the problems there is a danger of gradual erosion of confidence in medicine—as is plainly already the case among doctors and nursing staff.

Limitations

Although it cannot be excluded that the study participants were led by the wording of the interview questions, we believe the questions are methodologi-

cally legitimate because they emerged from the pilot study. Moreover, the study was concerned not only with whether influence was experienced, but also with how the participants saw the influence as being mediated in their daily practice. The researchers who acquired the data are probably also not entirely free of prejudice and have their own normative ideas. In the attempt to take account of these potential distortions, the study was carried out jointly by a physician and a former chief executive officer. The attitudes and perceptions presented here come from various data collection times. In the comprehensive project report

KEY MESSAGES

- Chief executive officers report that they have to make profits in order to compensate for financial deficits elsewhere; they also speak of a large number of measures undertaken to that end.
- Doctors state that funding shortages sometimes force them to consider factors other than the patient's wellbeing in their medical decision making.
- Doctors say that the implementation of operational guidelines has negative effects on treatment quality, patient safety, and their own working conditions.
- Doctors report increased workload, shortage of time, and speeding up of medical processes.

(2), they are assigned to the respective time and situation of collection.

Besides removing the taboo on discussion of the conflict between medical and economic goals, reformed funding regulations and improved health care structures are required. Intercommunication within the hospital and involvement of physicians in portfolio development and planning of services and resources need to be intensified. In this context, medical ethics must have a strong voice in the dialog between doctors and representatives of senior management. Our society could benefit greatly from discussion of the role of economic arguments in medicine and the health care system and the question of how best to balance the interests of the individual against those of society as a whole.

Conflict of interest statement

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Supplementary material

eMethods, eTables, eSupplement-Interview:
www.aerzteblatt-international.de/17m0797

CLINICAL SNAPSHOT

Accidental Thumb Injection With an Epinephrine Autoinjector

A 45-year-old woman presented to us after accidentally injecting herself in the thumb with an epinephrine autoinjector. The thumb was cold to palpation with blanching of the skin and delayed capillary refill, indicating hypoperfusion. The patient was treated topically with a warming cream containing cayenne pepper, nitroglycerine spray, and local heat application, although the literature contains no clear evidence that such treatment is helpful. The clinical findings four hours later indicated complete reperfusion of the thumb, and no further treatment was needed. In particular, there was no need for multiple phentolamine injections, as described in the literature.

The number of epinephrine pens in circulation is steadily rising; this episode of accidental injection is hardly an isolated case. Even the high epinephrine dose that this patient received (corresponding to that of 99% of cases described in the literature) fortunately did not lead to necrosis or necessitate partial or total amputation. The currently available evidence does not clearly show either a need for treatment after epinephrine injection into a finger, or the efficacy of any such treatment, including the treatment our patient received. This matter needs further study.

Blanching of the right thumb approximately 10 minutes after accidental injection with an epinephrine hydrochloride autoinjector.

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Supplementary material to:

The Commercialization of Patient-related Decision Making in Hospitals

A Qualitative Study of the Perceptions of Doctors and Chief Executive Officers

by Karl-Heinz Wehkamp and Heinz Naegler

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eMETHODS

Supplementary information about the methods

1. Study data

- Development of study concept: 2013
- Commencement of pilot study: late 2013
- Public discussion of preliminary results: 2014/2015
- Beginning of guided interviews: summer 2014
- Conclusion of interview phase: fall 2016
- Publication of study results: fall 2017/early 2018
- Financed through authors' own resources—decision to forgo third-party funding

2. Material and phases of research

- Concept of qualitative social research based on the grounded theory of Glaser and Strauss (17)
- Analysis of empirical data based on the method of Mayring (25) and Flick (26)

2.1 Phase 1: Exploration and pilot phase

- Interviews with five open questions (see *eSupplement-Interview* [in German]) about the changes in hospitals and in medicine in the previous few years
- The term “commercialization” was not used in the pilot phase.
- Selection of 10 chief executive officers following a personal approach by the economist. Selection of 12 doctors in the same way by the doctor.
- Selection criteria:
 - Several years' experience
 - Various funded hospitals (public/communal, independent/non-profit-making, private)
 - Hospitals of various categories: basic care, full range of care, university hospitals
 - Hospitals from several different federal states
 - Doctors from various medical disciplines and of varying seniority (department heads, senior physicians, juniors)
 - Men and women
- Conduct of the exploratory interviews by the authors themselves, bearing in mind the risk of the probands being influenced by the research hypotheses. The latter were not mentioned. The word “commercialization” was avoided.
- Initial training in methods (oriented on a German Research Foundation training course on passive euthanasia attended by one of the authors)
- Recording of the participants' contributions, written documentation of interview and description of

environment

- Duration of interview: 60 to 120 min
- Joint discussion of every protocol, definition of categories, classification of phenomena according to how often they were mentioned
- Compilation of several preliminary reports

2.2 Phase 2: Design of guided interview

- On the basis of the 22 interviews in the exploration and pilot phase, a guided interview with open and closed questions was designed and tested (see *eSupplement-Interview*)

2.3. Phase 3: Conduct of guided interview

- Selection of interview partners so as to achieve a group of chief executive officers and doctors that was as varied as possible. The following criteria were observed:
 - Public, independent/non-profit-making, and private hospitals (exclusion of psychiatric facilities and hospitals run by employers' liability insurance associations)
 - Various federal states
 - Hospitals of various categories: basic care, focal care, full range of care, university hospitals
 - Doctors: department heads, qualified specialists, senior physicians, junior doctors
 - Doctors: various specialties
 - Men and women
- Potential probands approached in writing or in person, appointment made
- With one exception, all doctors approached were prepared to participate.
- Of the 68 chief executive officers approached, 21 agreed to an interview. “Lack of time” was stated as the reason for not taking part.
- Interviews conducted in privacy. Documentation as in step 2.1—supplementation of verbal interviews with a questionnaire (see *eSupplement-Interview*) and description of environment. Reference to the possibility of a second meeting or telephone call.
- Duration of interviews: 60 to 140 min

2.4 Phase 4: Focus groups

- At three hospitals focus groups were convened, with a total of 22 participants. Those who took part were doctors, nurses, controllers, hospital chaplains, works

council members, and managers. Individual reports from the interviews were presented as case vignettes and discussed openly. The discussions were recorded, transcribed, and evaluated in the context of a master's degree project at the University of Bremen. The focus group meetings essentially yielded no new findings but broadly confirmed the statements of both interview groups.

2.5 Supplementary information

Several doctors contacted the interviewer at a later date. The contents of the conversations were noted and included in the analysis.

2.6.1 Written follow-up questionnaire and workshop

Evaluation of the guided interviews showed differences, some of them pronounced, between the statements of the chief executive officers and the doctors. Therefore, 10 members of each group were asked how they thought these differences could be explained. The written responses were included in the analysis. The 20 participants were also invited to a 4-h workshop in Berlin. Five doctors and seven chief executive officers attended. The

written record of the meeting was also included in the analysis.

2.6.2 Field research notes

Simultaneously with but independent of the research project, staff at several hospitals were asked about reporting of problems. Some of the notes made during these conversations were included in the analysis.

3. Analysis

- All interviews were read word for word, interpreted, and discussed jointly.
- The phenomena documented were categorized and the respective text segments classified into the categories.
- All available responses to the questions in the guided interview were classified in tabular form.
- The results of the guided interviews were classified quantitatively and by text separately for the doctors and the chief executive officers, enabling comparison of the content of the responses in tabular form.
- The summarized results were discussed intensively and jointly committed to writing.

eTABLE 1

Breakdown of the probands/hospitals included in the pilot and guided interviews, classified by function, care level, and type of funding

Function	Hospital group			Full care (including university hospital)			Focal care			Basic care			Specialized hospital			Total		
	Pu	I	Pr	Pu	I	Pr	Pu	I	Pr	Pu	I	Pr	Pu	I	Pr	Pu	I	Pr
Chief executive officers (CEOs)	2	7	3	7	1	–	2	1	1	1	3	1	1	–	1	13	12	6
CEOs by care level	12	8	4	5	2	31	–	–	–	–	–	–	–	–	–	–	–	–
Doctors	–	–	1	6	–	6	3	8	3	3	–	–	1	–	1	13	8	11
Doctors by care level	1	12	14	3	2	32	–	–	–	–	–	–	–	–	–	–	–	–
CEOs and doctors	2	7	4	13	1	6	5	9	4	4	3	1	2	–	3	26	20	17
CEOs and doctors by care level	13	20	18	8	4	63	–	–	–	–	–	–	–	–	–	–	–	–
Discussion groups/focus groups	–	–	–	2	–	–	1	–	–	1	1	1	–	–	–	4	1	1

I = Independent/non-profit-making; Pr = private; Pu = public

eTABLE 2

Interview partners by federal state

	Federal state																
	BW	FB	B	BR	HB	HH	HE	MV	N	NW	RP	S	FS	SA	SH	T	Total
Chief executive officers	1	–	10	2	2	2	1	1	3	3	1	–	3	1	1	–	31
Doctors	2	4	3	1	4	6	–	1	4	1	–	–	–	1	5	–	32
Total	3	4	13	3	6	8	1	2	7	4	1	–	3	2	6	–	63

BW Baden-Württemberg; FB Bavaria; B Berlin; BR Brandenburg; HE Hesse; MV Mecklenburg-West Pomerania; HB Bremen; HH Hamburg; N Lower Saxony; NW North Rhine-Westphalia; RP Rhineland-Palatinate; S Saarland; FS Saxony; SA Saxony-Anhalt; SH Schleswig-Holstein; T Thuringia

eTABLE 3

Interviewed chief executive officers by qualification

Qualification	Physician	Nurse	Business administration/economist	Lawyer	Other	Total
No. of chief executive officers	12	3	14	1	1	31

eTABLE 4

Duration of employment as chief executive officer at time of qualitative interview

No. of years in post at time of qualitative interview	<5	5–9	10–19	>19	Total
No. of chief executive officers interviewed	7	8	4	2	21